

We claim:

1. A method of manufacturing a shaped polymeric article by substantially continuous vacuum forming over a flexible rotating belt, comprising:

(a) providing a sheet of a hot polymeric material;

(b) disposing said sheet onto said rotating belt, said rotating belt including a mold impression therein and a plurality of apertures therethrough;

(c) applying vacuum pressure to said hot polymeric material through said belt, so as to draw said sheet into intimate forming contact with said mold impression to form a patterned sheet portion and remaining sheet portion;

(d) cooling at least said patterned sheet portion below a heat deflection temperature of said polymeric material;

(e) further forming said remaining sheet portion;

(f) cooling said remaining sheet portion below said heat deflection temperature to produce a relatively continuous shaped sheet; and

(g) severing a length of said shaped sheet to produce a shaped polymeric article.

2. The method of Claim 1 wherein said cooling step (d) comprises water cooling said patterned sheet portion.

3. The method of Claim 2 wherein said cooling step (d) comprises substantially shielding said remaining sheet portion from said water cooling.

4. The method of Claim 3 wherein said shielding step comprises disposing a hooded chamber above said rotating belt for blocking a water spray from contacting a pair of lateral edge portions of said extruded sheet.

5. The method of Claim 1 wherein said shaping step (e) comprises mechanically forming a pair of lateral edge portions of said sheet.

6. The method of Claim 5 wherein said lateral edge portions are formed into a butt-edge and hanger-edge of a siding panel.

7. The method of Claim 6 further comprising mechanically punching said hanger-edge of said siding panel to provide apertures for fasteners.

8. The method of Claim 1 wherein said cooling step (f) comprises water cooling a pair of lateral edge portions of said remaining sheet portion to fix a shape formed by said shaping step (e).

9. The method of Claim 1 wherein said shaping step (e) occurs when said patterned sheet portion has a temperature of about 140-150°F and said remaining sheet portion has a temperature of greater than 170°F.

10. A method of manufacturing a vinyl containing siding panel by substantially continuous vacuum forming over a flexible rotating belt, comprising:

(a) providing an extruded sheet of hot polymeric material containing polyvinyl chloride;

(b) disposing said extruded sheet onto said flexible rotating belt, said rotating belt including a mold impression resembling a textured siding panel therein and a plurality of apertures therethrough;

(c) applying vacuum pressure to said extruded sheet through said plurality of apertures of said flexible rotating belt, for drawing said extruded sheet into intimate forming contact with said mold impression to form a patterned central portion and a pair of lateral edge portions;

(d) water cooling at least said patterned central portion below a heat deflection temperature of said polymeric material;

(e) shaping said pair of lateral edge portions to provide a butt-edge portion and a hanger-edge portion;

(f) water cooling said butt-edge and said hanger-edge portions below said heat deflection temperature of said polymeric material;

(g) punching a plurality of fastener apertures through said hanger-edge portion; and

(h) severing said sheet to provide a plurality of individual siding panels.

11. The method of Claim 10 wherein said water cooling steps (d) and (f) are separated by said shaping step (e).

12. The method of Claim 10 wherein said shaping step (e) and said applying vacuum pressure step (c) are accomplished at least partly simultaneously.

13. The method of Claim 10 wherein said shaping step (e) occurs while said lateral edge portions comprise a surface temperature which is about above said heat deflection temperature of said polymeric material.

14. The method of Claim 10 wherein said shaping step (e) comprises using a plurality of sizing members spaced longitudinally along said sheet.

15. The method of Claim 14 wherein at least one of said sizing members comprises water cooling means.

16. An apparatus for continuously vacuum forming a shaped polymeric article over a flexible rotating belt, comprising:

(a) an extruder for producing an extruded sheet of hot polymeric material;

(b) rotating belt means comprising a drive roller, an idle roller, and a flexible belt suspended over said drive and idle rollers, said flexible belt including a resilient mold belt portion for contacting said extruded sheet, said mold belt portion comprising a plurality of apertures therethrough and a mold impression therein;

(c) vacuum means for applying vacuum pressure to said extruded sheet through at least said apertures in said mold belt, so as to draw said extruded sheet into intimate forming contact with said mold impression to form a patterned portion and a remaining portion of said extruded sheet while said polymeric material is still hot;

(d) cooling means for reducing a temperature of said patterned sheet portion below a heat deflection temperature of said polymeric material;

(e) shaping means for forming said remaining sheet portion;

(f) further cooling means for cooling said remaining sheet portion below said heat deflection temperature; and

(g) cut-off means for severing a length of said extended sheet to produce a shaped polymeric article.

5 17. The apparatus of Claim 16 wherein said shaping means (e) comprises a plurality of sizers for mechanically forming edge portions of said sheet while said edge portions are still hot.

10 18. The apparatus of Claim 17 wherein at least one of said sizers comprises water cooling for reducing a temperature of said edge portions below the heat deflection temperature of said polymeric material.

15 19. The apparatus of Claim 18 further comprising mechanical punching means for producing a plurality of fastener holes in a first edge portion of said sheet.

20 20. An apparatus for continuous vacuum forming of a building material component by substantially continuous vacuum forming a polymeric sheet over a flexible rotating belt, comprising:

 (a) an extruder for producing a sheet of hot polymeric material;

 (b) rotating belt means comprising a drive roller, an idle roller, and flexible belt means suspended over said drive and idle rollers, said flexible belt means including a resilient mold belt portion for contacting said sheet of hot polymeric material, said mold belt portion comprising a plurality of apertures therethrough and a mold impression therein;

 (c) vacuum means for applying vacuum pressure to said sheet of hot polymeric material through said apertures in said mold belt, so as to draw said extruded sheet into intimate forming contact with said mold impression to form a patterned portion and a remaining portion of said sheet;

25 (d) cooling means for reducing a temperature of said patterned sheet portion below a heat deflection temperature of said polymeric material;

 (e) shaping means for forming said remaining sheet portion;

(f) second cooling means for cooling said remaining sheet portion below said heat deflection temperature; and

(g) cut-off means for severing a length of said sheet to produce a shaped polymeric article.